



# **Rocky Flats Environmental Technology Site**

## **RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)**

### **BUILDINGS 331FD (FIRE DEPARTMENT) AND C331**

**REVISION 0**

**April 14, 2003**



**CLASSIFICATION REVIEW NOT REQUIRED PER  
EXEMPTION NUMBER CEX-005-02**

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**IA-A-001394**


## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

### BUILDINGS 331FD (FIRE DEPARTMENT) AND C331

REVISION 0

April 14, 2003

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## ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level – elevated measurement comparison
DCGL <sub>w</sub>	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U S Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

## EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Buildings 331FD (Fire Department) and C331. Because these facilities are anticipated Type 1 facilities, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All facility surfaces were characterized in this RLC, including the interior and exterior surfaces [i.e., equipment, floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facility was not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

The RLC encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report.

Results indicate that no radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400.5. Friable and non-friable asbestos containing building materials were identified in Building 331FD. All beryllium sample results were less than  $0.1 \mu\text{g}/100\text{cm}^2$ . Fluorescent light ballasts may contain PCBs. PCB ballasts and asbestos containing materials will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. Concrete associated with 331FD meets the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete. Due to the petroleum staining in C331, concrete from this building will not be used for onsite recycling.

Building 331 was split into two characterization areas: 331FD (Fire Department) and 331G (Garage). The scope of this RLCR only included the Fire Department portions of 331; the 331G RLCR will be performed in the future.

Based upon this RLCR, Buildings 331FD (Fire Department) and C331 are considered Type 1 facilities. To ensure that the facilities remain free of contamination and RLC data remain valid, Level 2 Isolation Controls have been established and the facilities posted accordingly.

## 1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Buildings 331FD (Fire Department) and C331. Because these facilities are anticipated Type 1 facilities, a PDS characterization was performed. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities [i.e., equipment, floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facility was not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these are Buildings 331FD and C331. Building 331 was split into two characterization areas: 331FD (Fire Department) and 331G (Garage). The scope of this RLCR only included the Fire Department portions of 331; the 331G RLCR will be performed in the future. The locations of these facilities are shown in Attachment A, *Facility Location Map*.

Before these facilities can be removed, a Pre-Demolition Survey (PDS) must be conducted; this document presents the PDS results. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report.

### 1.1 Purpose

The purpose of this report is to communicate and document the results of the PDS effort. A PDS is performed before building demolition to define the pre-demolition radiological and chemical conditions of a facility. Pre-demolition conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

### 1.2 Scope

This report presents the pre-demolition radiological and chemical conditions of Buildings 331FD and C331. The 331G RLCR will be performed in the future. Environmental media beneath and surrounding the facility are not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

### 1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this RLC were the same DQOs identified in the Pre-Demolition survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

## 2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) was conducted to understand the facility histories and related hazards. The assessment consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages. Results of the facility-specific HSA were documented in a facility-specific *Historical Site Assessment Report (HSAR) for the Area 3 Group 3 facilities*, dated February 2002, Revision 0. Refer to Attachment B, *Historical Site Assessment Report*, for a copy of Buildings 331FD and C331 HSAR. In summary, the HSAR identified minimal potential for radiological and chemical hazards, except the potential for asbestos containing materials and PCBs in paint and light ballasts.

## 3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Buildings 331FD and C331 were characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, Radiological Characterization Plans were developed during the planning phase that describe the minimum survey requirements (refer to the RISS Characterization Project files).

Two radiological survey packages were developed for the interior of Buildings 331FD and C331. 331-B-003 (331FD interior) and C331-B-004 (C331 interior). The survey packages were developed in accordance with Radiological Safety Practices (RSP) 16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), media samples, and scan measurements were collected in accordance with RSP 16 02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16 04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16 05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C, *Radiological Data Summary and Survey Maps*. The radiological survey unit packages are maintained in the RISS Characterization Project files.

A total of 90 TSA measurements (30 random, 54 biased, and 6 QC), 84 RSA measurements (30 random and 54 biased) and surface scan surveys on a minimum of 5% of interior surfaces were performed. The PDS data confirmed the facilities do not contain radiological contamination above the surface contamination guidelines provided in the PDSP. Isolation control postings are displayed on the buildings to ensure no radioactive materials are introduced.

The exterior radiological surveys for Buildings 331FD and C331 were performed as part of the RISS West Side Exterior PDS strategy effort (authorized by Department of Energy letter, 02-DOE-01598, dated December 13<sup>th</sup>, 2002 and approved by CDPHE letter, *RE Proposed Deviations From The Pre-Demolition Survey Plan (PDSP)*, dated January 27, 2003, refer to the RISS Characterization Project Files for letter copies) The RISS West Side exterior building radiological surveys and locations can be found in survey unit package EXT-B-001, *RISS West Side Building Exteriors* Six (6) biased TSA measurements, six (6) biased RSA measurements, and a one (1) square meter scan at each of the six TSA/RSA locations were performed at biased locations on the exterior surfaces of Buildings 331FD and C331 In addition, two (2) biased TSA measurements, two (2) biased RSA measurements, and 10 percent biased scan surveys were performed on concrete surfaces associated with Buildings 331FD and C331 The RLC data collected in exterior survey unit package EXT-B-001 confirmed that the exterior surfaces of Buildings 331FD and C331 do not contain radiological contamination above the surface contamination guidelines provided in the PDSP Radiological survey data, statistical analysis results, and survey map locations for the *West-Side Exterior* survey unit package EXT-B-001 are maintained in the RISS Characterization Project files

#### 4 CHEMICAL CHARACTERIZATION AND HAZARDS

Buildings 331FD and C331 were characterized for chemical hazards per the PDSP Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in these facilities Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined A Chemical Characterization Package (refer to RISS Characterization Project files) was developed during the planning phase that describes sampling requirements, the justification for the sample locations and estimated number of samples Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, and PCBs Refer to Attachment D, *Chemical Data Summaries and Sample Maps*, for details on sample results and sample locations

##### 4.1 Asbestos

Sitex Environmental, Inc performed a comprehensive, invasive asbestos inspection in Building 331 (331FD and 331G), the details of which are contained in its report dated April 22, 1996 (refer to RISS Characterization Project files) Sitex identified the following friable and non-friable asbestos containing building materials vinyl floor tiles and mastic adhesive, interior and exterior Transite wall panels, thermal system insulation on pipes, elbows, fittings, and expansion tanks, and vibration isolators Sitex, however, did not sample the cinderblock paint and window caulking in Building 331FD As part of this RLC, a CDPHE-certified RISS asbestos inspector sampled the paint and window caulking to determine asbestos content Both the window caulking and cinderblock paint in Building 331FD was negative for asbestos (< 1% by point count) Asbestos laboratory analysis data and sample location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*



## 4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Buildings 331FD and C331 are anticipated Type 1 facilities. There was not, however, adequate historical and process knowledge to conclude that beryllium was not used or stored in these buildings. Therefore, biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition.

All beryllium smear sample results were less than  $0.1 \mu\text{g}/100\text{cm}^2$ . Beryllium laboratory sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

## 4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on a review of the HSAR and facility walk-downs, these facilities do not contain evidence of RCRA/CERCLA contamination. The hose tower at Building 331FD was historically used to store spill cleanup materials. The spills were primarily oil, antifreeze, and gasoline and were containerized before being brought to Building 331FD. The numerous small oil and fuel spills in Building C331 were cleaned by adsorption with rags or Floor Dry type materials, and have resulted in stains that are not an indication of RCRA/CERCLA concerns. Due to the above stated rationale, sampling was not performed in these facilities as part of this RLC.

Sampling for lead in paint in these facilities was not performed. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal.

These facilities may contain RCRA regulated materials such as mercury switches and fluorescent lamps. A thorough inspection of the facility will be made, and all regulated materials will be removed, prior to demolition.

## 4.4 Polychlorinated Biphenyls (PCBs)

Based on a review of the HSAR and facility walk-downs, Buildings 331FD and C331 do not have a history of PCB use and do not show evidence of contamination, therefore, sampling was not performed as part of this RLC. Based on the age of Buildings 331FD and C331 (constructed prior to 1980), paints used may contain PCBs, and painted surfaces will need to be disposed of as PCB Bulk Product Waste. Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K. Clough, US EPA Region 8, to J. Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-

Based Painted Concrete), provided the concrete meets the unrestricted release criteria outlined in the Concrete Recycling RSOP

Because these facilities may contain fluorescent light ballasts containing PCBs, fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations. PCB ballasts will be identified based on factors such as labeling (e.g., PCB-containing and non PCB-containing), manufacturer, and date of manufacturing. All ballasts that do not indicate non PCB-containing are assumed to be PCB-containing. Leaking PCB containing ballasts will be removed prior to demolition, and disposed of in accordance with Colorado hazardous waste regulations.

## **5 PHYSICAL HAZARDS**

Physical hazards associated with Buildings 331FD and C331 are those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

## **6 DATA QUALITY ASSESSMENT**

Data used in making management decisions for the decommissioning of Buildings 331FD and C331 and consequent waste management are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- ◆ the *number* of samples and surveys,
- ◆ the *types* of samples and surveys,
- ◆ the sampling/survey process as implemented "in the field", and,
- ◆ the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment E.

## **7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES**

The demolition and disposal of Buildings 331FD and C331 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All waste can be disposed of as sanitary waste, except asbestos containing material and PCB Bulk Product Waste. There is no radioactive or hazardous waste. Asbestos and PCB ballasts will be managed pursuant to Site asbestos and PCB abatement and waste management procedures.

Concrete associated with Building 331FD meets the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete. Due to the petroleum staining in Building C331, concrete from this building will not be used for onsite recycling.

Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
331FD	44,500	0	2,800	0	900	141 Non-Friable, 152 Friable	Built-up Roofing 3,600 cu ft
C331	250	150	0	0	0	0	Cargo containers are excluded from estimate

## 8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Buildings 331FD and C331 are classified as RFCA Type 1 facilities pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999). The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC data.

The RLC of Buildings 331FD and C331 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. The facilities do not contain radiological or hazardous wastes. PCB ballasts and asbestos containing materials will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. Concrete associated with 331FD meets the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete. Due to the petroleum staining in C331, concrete from this building will not be used for onsite recycling.

Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure these Type 1 facilities remain free of contamination and RLC data remain valid, Level 2 Isolation Controls have been established and the facilities posted accordingly.

## 9 REFERENCES

- DOE/RFEO, CDPHE, EPA, 1996 Rocky Flats Cleanup Agreement (RFCA), July 19, 1996
- DOE Order 5400.5, "Radiation Protection of the Public and the Environment "
- EPA, 1994 "The Data Quality Objective Process," EPA QA/G-4
- K-H, 1999 Decommissioning Program Plan, June 21, 1999
- MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev 1, November 1, 2001
- MAN-076-FDPM, *Facility Disposition Program Manual*, Rev 3, January 1, 2002
- MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev 3, July 15, 2002
- MAN-127-PDSP, *Pre-DEMOLITION Survey Plan for D&D Facilities*, Rev 1, July 15, 2002
- MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual, December 1997 (NUREG-1575, EPA 402-R-97-016)
- PRO-475-RSP-16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev 1, May 22, 2001
- PRO-476-RSP-16 02, *Pre-DEMOLITION (Final Status) Radiological Surveys of Surfaces and Structures*, Rev 1, May 22, 2001
- PRO-477-RSP-16 03, *Radiological Samples of Building Media*, Rev 1, May 22, 2001
- PRO-478-RSP-16 04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev 1, May 22, 2001
- PRO-479-RSP-16 05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev 1, May 22, 2001
- PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999
- PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999
- RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition
- RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal
- RFCA Standard Operation Protocol for Recycling Concrete, September 28, 1999
- RFETS Historical Site Assessment Report for the Area 3, Group 3 facilities, dated February 2002, Revision 0

# ATTACHMENT A

## Facility Location Map

# Area 3 Group 3c Buildings C331 & 331FD

## Standard Map Features

- Buildings and other structures
- Demolished buildings and other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES  
Buildings, fences, hydrography roads and other structures from 1994 aerial flyover data captured by EG&G ISI, Las Vegas. Digitized from the orthophotograph. 1995

Scale = 1:12,450  
1 inch represents approximately 1038 feet

Scale Plane Coordinate Projection  
Colorado Central Zone  
Datum NAD27

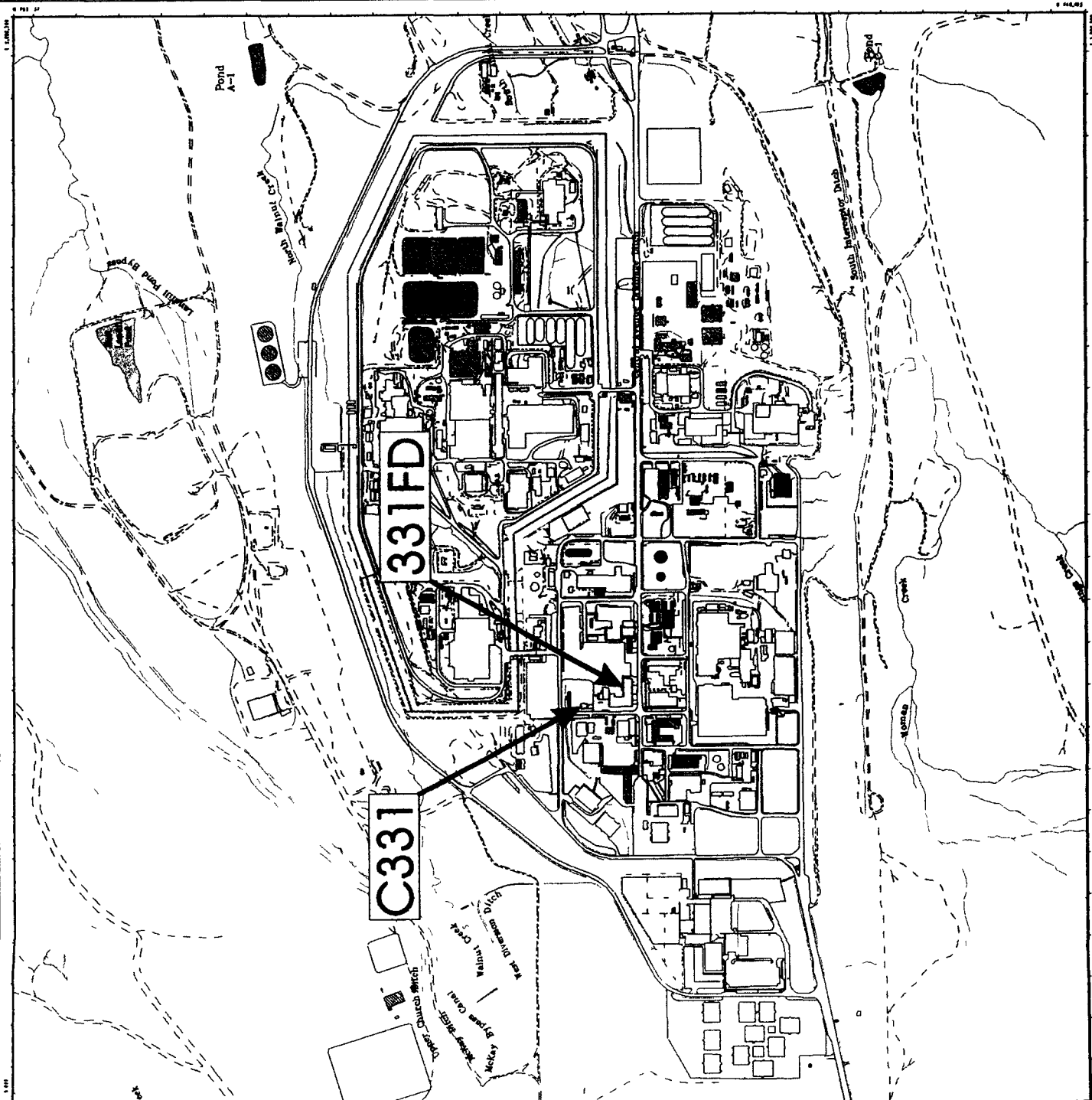
U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by  
GARDNER-HILL

Prepared for  
Kaiser

MAP ID: FY 2003

April 9, 2003



## ATTACHMENT B

# Historical Site Assessment Report

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
February, 2002 Rev. 0**

**Facility ID** Buildings 331, C331, 331F, 331S, 334, T334B, T334D, and 335

**Anticipated Facility Type (1, 2, or 3)** Buildings 331, C331, 331F, 331S, 334, T334B, T334D, and 335 are anticipated Type 1 facilities

This facility-specific Historical Site Assessment (HSA) has been performed in accordance with  
*D&D Characterization Protocol*, RFETS MAN-077-DDCP, latest version, and  
*Facility Disposition Program Manual*, RFETS MAN-076-FDPM, latest version

**Physical Description**

**Building 331**

Building 331 is the Fire Station and Vehicle Maintenance Garage. This building is a two-story structure built in 1953 and has a total of 23,540 sq ft of floor space. Building 331 has had three additions to its original structure. In 1960 a 400 sq ft addition was added to the west of Room 114. In 1967 a 400 sq ft tool shed was added to the north side of the 1960 addition. In 1968 a 2,400 sq ft addition was added to provide additional office space and off-shift living quarter for the RFETS fireman.

The roof is constructed of concrete panels covered with built up roofing. The walls of the original building are constructed of re-enforced concrete, the 1960 addition is constructed of enforced concrete, the 1967 addition is constructed of corrugated metal walls on a steel from, and the 1968 addition is constructed of cinder blocks. The floors are poured concrete on grade.

Building 331 is serviced by the following utilities, water, sanitary, electric, and steam heat. An overhead sprinkler system and wall-mounted fire extinguishers provide fire protection.

**Building C331**

Building C331 is an 800 sq ft structure placed into service in 1975. The structure is made up of two cargo containers spaced approximately 20 ft apart, with a roof supported by the cargo containers. The north and south walls are made of plywood with a man entrance on the south end of the building and a roll-up door on the north end of the building. The east and west walls are the sides of the cargo containers. The roof is constructed of wood covered with asphalt shingles and no insulation. The floor is a concrete slab poured on grade.

Building C331 is serviced by the following utilities: electrical and fire protection is provided by wall mounted fire extinguishers.

**Building 331F**

Building 331F is the fuel filling station and was constructed in 1996. Building 331F consists of a 54 sq ft light metal frame building designed to house a filling station attendant (currently used to store supplies) and 5 gas station style fuel pumps built on a concrete slab, which acts as a parking area for vehicles being fueled. Building 33F has 5 underground fuel tanks (TK-5A, TK-5B, TK-6A, TK-7A and TK-8A).

Building 331F has the following utilities: electrical and fire protection is provided by wall mounted fire extinguishers.



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**Building 331S**

Building 331S is made up of 5 cargo containers placed in a row and a wooden open-ended enclosure used for storage on the east side of the cargo containers. The metal enclosure has metal side with wooden support members and a metal roof. This facility is built on an asphalt pad north of Building 331.

Building 331S has the following utilities, electric and fire suppression is provided by a wall-mounted fire extinguisher.

**Building 334**

Building 334 is the General Office and Maintenance Shop Facility and was built in 1953. This building has 42,960 sq. ft. of floor space, including the mezzanine. Building 334 has had two additions to the original structure. In 1970 a 6,000 sq. ft. addition was added to the east side of the original structure, and in 1985 a 3,200 sq. ft. addition was added to the north side of the 1970 addition.

The roof is constructed of concrete panel covered with built up roofing. The wall of the original building are constructed of re-enforced concrete, the 1970 addition is re-enforced concrete, and the 1985 addition is constructed of cinder blocks. The floors are poured concrete on grade.

Building 334 is serviced by the following utilities, water, sanitary, electric, and steam heat. Fire protection is provided by an overhead sprinkler system and wall-mounted fire extinguishers.

**Building T334B**

Building T334B is a 1960 sq. ft. General Office Trailer purchased in 1984. T334B has corrugated metal siding with a metal roof. T334B has hard walled offices and a large conference area in the center.

Trailer T334B is serviced by the following utilities, electric, fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers.

**Building T334D**

Building T334D is a 600 sq. ft. General Office Trailer purchased in 1990. T334B has corrugated metal siding with a metal roof. T334B has hard walled offices on both ends and a central work area divided into cubicles.

Trailer T334D is serviced by the following utilities, Electric, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers.

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**Building 335**

Building 335 is the fire training building and was constructed in 1969. Building 335 is a 2,160 sq ft metal frame building with corrugated metal sides and roof, built on a concrete slab. The west section of the building was added in 1973. Tank 115 is a propane tank located north of the building and is used to provide an ignition source during the fire training exercises. On the north side of Building 335 is an 8 ft by 15 ft. metal carbon dioxide fire extinguisher filling station constructed on a concrete pad. The carbon dioxide filling station was purchased as a used piece of equipment (likely manufactured in the 1960s) and installed in the early 1980s, and has been out of service since 1995.

Building 335 is serviced by the following utilities: electric, water, and fire protection is provided by wall mounted fire extinguishers. The east side of the structure has an overhead sprinkler system, which is used for fire training purposes only.

**Historical Operations**

**Building 331**

Building 331 houses both the site vehicle maintenance garage and the site fire department. This facility was constructed in 1953 and has had several additions, which are documented in the building description section above.

The garage portion of Building 331 houses the vehicle maintenance garage. RFETS vehicles and equipment with small engines are maintained in the Building 331 garage. Occasionally spills of gasoline, oil, and antifreeze occur and are cleaned-up using an absorbent. This absorbed waste is disposed of in accordance with waste operations guidelines. Used antifreeze, oils, and lead-acid batteries are sent off site for re-cycle.

Rooms 113, 114, 115, 116, and 117 were used from 1953 to 1968 as a small metallurgical R & D laboratory, which handled some depleted uranium material. This laboratory was stripped out and converted to a storage area and a work area for the garage in 1968. An old sanitary drain, which was covered with a steel plate, has the following label: "Radioactive contamination in sanitary drain, 3-21-77" still remains in Room 114 of the garage area. Building 331 has no process waste lines.

The Fire Department portion of Building 331 is used to house fire equipment and trucks, as well as office space and off-shift living quarters for the RFETS fireman. This facility is used to clean fire response equipment, to perform self-contained breathing apparatus (SCBA) maintenance, and Haz Mat spill control equipment.

The most common spills that the Haz Mat team responds to are oil, antifreeze, hydraulic fluid, and gasoline and diesel fuel. Spill clean-up material prior to the mid 1980s was staged in hose tower basin (with a french drain) prior to disposal. Spill clean-up material is currently handled on a case-by-case basis, at the direction of waste operations personnel. See the Building 331 WISRC for additional Building 331 waste stream descriptions. See the Historical Operation section for Building 331F for a discussion on the history of the filling station originally located south of Building, later moved to the north side of Building 331, and foamed in place in 1996.

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**Building C331**

Building C331 is constructed with two cargo containers placed about 20 feet apart and a roof connecting the two cargo containers. The cargo containers and the work area between the cargo containers is used to store grounds-keeping equipment and supplies such as lawn tractors, weed-whackers, hand tools, and other grounds-keeping supplies and equipment.

**Building 331F**

Building 331F is the new filling station and is used to fill RFETS vehicle with fuel (diesel and gas). Building 331F consists of a small metal frame building designed to house a filling station attendant (currently used to store supplies), and 5 gas station style fuel pumps located on a concrete slab, which acts as a parking area for vehicles being fueled. Building 331F has 5 underground fuel tanks (TK-5A, TK-5B, TK-6A, TK-7A and TK-8A).

Building 331F was constructed to replace the old filling station that was located just north of Building 331. The old filling station was removed when the new station was constructed in 1996. The old filling station tanks were cleaned and foamed in place in 1996. The tank numbers for the old filling station are Tanks 101, 102, 103, 104.

The original filling station (constructed in 1953) was located south of Building 331. In the late 1950s the original filling station was moved to the north side of Building 331 and is referred to as the old filling station (documented above). The tanks were believed to have been excavated and moved to the new location north of Building 331 in the late 1950s. There is no documentation indicating that the original tanks are still in place on the north side of Building 331.

**Building 331S**

Building 331S is made up of 4 cargo containers placed in a row and a metal open-ended enclosure that stores used tires, new drummed product (mostly oils), and some non-regulated used absorbent containing spilled liquids (diesel and oils). Liquid drums are placed on a secondary containment pallet. The material stored here is not RCRA regulated. The cargo containers are used to store spare parts and tires for the maintenance of the RFETS fleet of equipment by Building 331 personnel.

**Building 334**

Building 334 is the primary RFETS maintenance facility. This building has both offices and shops to support maintenance activities at RFETS. These activities include electrical, carpentry, sheet metal work, pipe fitting, HVAC, glass shop, machining, welding and an instrument shop (a.k.a. Standards Lab). Wastes such as used oils, hydraulic fluids, and coolants are put in appropriate waste containers then processed through waste operations group for disposition. In the 1960s, several pieces of equipment, from Building 444 and 881, were installed in the Buildings 334 machine shop. When this equipment was removed in the 1980s, radiological contamination was found in, and under, some of this machinery in the machine shop. See the Building 334 WISRC for additional Building 334 waste stream descriptions. On a few occasions in the 1960s, uranium parts were escorted to building 334 for some specialty machine work. After this work was performed, the machines were cleaned and the area surveyed.

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**Trailer T334B**

Trailer T334B is a general office trailer used by the RFETS Roads and Ground Department. Prior to becoming the general office trailer for Roads and Grounds personnel in 1999, the trailer was used as a general office trailer for PU&D. This trailer has historically always been used as a general office support trailer since it came on site in 1984.

**Trailer T334D**

Trailer T334D is a general office trailer used to house fire department support personnel. This trailer has historically always been used as a general office trailer since it came on site in 1990.

**Building 335**

Building 335 is used for fire training exercises and fire extinguisher maintenance activities. The building is partitioned in the center. The east portion of the building is used for fire training purposes and is lined with wallboard. Several times a year, fires were started in the east side of the building to study fire behavior and to provide training in the extinguishing of fires. This practice stopped in the 1980s. The walls and ceiling are covered with smoke residue from the training exercises. Source material used in the training exercises were actual waste streams from Building 444 and other facilities in the 400 area. The wastes included oils, solvents, pyrophoric metals, and on occasions, depleted uranium.

The west side of the building was used to re-charge and maintain fire extinguishers for RFETS. These fire extinguishers were located in all areas of the plant. On several occasions in the 1980s, fire extinguishers in the building for maintenance were found to be radiologically contaminated. Chemicals used to fill fire extinguishers include carbon dioxide, halon, nitrogen, mono-ammonium phosphate, and sodium chloride. See the Building 335 WISRC for additional Building 335 waste stream descriptions.

**Current Operational Status**

Buildings 331, C331, 331F, 331S, 334, and 335 are all currently operational. Building 335 is in the process of having the equipment stripped out to begin D&D activities.

**Contaminants of Concern**

**Asbestos**

*Describe any potential, likely, or known sources of Asbestos*

The IH group in Trailer T130B has an Asbestos Inspection Plan and Operations Maintenance Plan for Buildings 331 and 334, that summarized some general historical asbestos data. The Trailer Asbestos Management Program Baseline summarized some general T334B and T334D historical asbestos data.

The remaining facilities in the HSA have no known comprehensive asbestos surveys.

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**Beryllium (Be)**

*Describe any potential, likely, or known Be production or storage locations*

The only building addressed in this HSA on the List of known Be areas is Building 331 (Rooms 114 and 117), which is listed because of its historical use as a metallurgical laboratory involving some beryllium operations. In the past, the fire Department side of Building 331 has, on occasion, had a positive hit for beryllium on fire fighting equipment, which has entered beryllium areas. When beryllium contamination was detected on equipment, the equipment was always cleaned. The fire department side of Building 331 is not known to have any current Beryllium contamination problems.

*Summarize any recent Be sampling results*

No recent Be samples collected on any of these facilities

**Lead**

*Describe any potential, likely, or known sources of Lead (e.g., paint, shielding, etc.)*

Lead in paint and lead in electrical equipment may be a concern for some of the facilities in this HSA due to the age of construction. Lead shielding was not known to have been used in any of these facilities.

See the section below for RCRA/CERCLA constituents for lead in waste stream references related to these buildings.

**RCRA/CERCLA Constituents**

*Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e.g., chemical storage, waste storage, and processes)*

Building 331, C331, and 334 have had occasional small spills from gasoline, diesel, oils, hydraulic fluids and antifreeze. These spills were normally cleaned using an absorbent and the used absorbent properly disposed of. Used oils and antifreezes are re-cycled. The fire department hose tower (Building 331) was used until the late 1980s to temporarily store absorbed spill response waste. The tanks for the old filling station have been cleaned and foamed in place in 1996. See the Building specific WSRIC for more detailed listing of the waste streams associated with each building addressed in this HSA.

Building 331 housed RCRA Unit 2, which was closed in 1996 in accordance with the RCRA Closure Plan for B331. No other buildings addressed in this HSA are associated with Permitted RCRA Units.

*Describe any potential, likely, or known spill locations (and sources, if any)*

Small volume spills of gasoline, Diesel, oil, hydraulic fluids, and antifreeze occurred in many of these facilities and are discussed in the "Process History" section above. Additional, RCRA/CERCLA release information is documented in the IHSS, PAC, and UBC section below.

*Describe methods in which spills were mitigated, if any*

Spills were normally absorbed and disposed of in accordance with RFETS requirements.

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**PCBs**

*Describe any potential, likely, or known sources of PCBs (e g , light ballasts, paints, equipment, etc )*

Due to the age of these facilities, there may be a concern with PCBs in paint, light ballasts, and electrical equipment  
PCBs where not known to have been regularly handled in any of these facilities

*Describe any potential, likely, or known spill locations (and sources, if any)*

No known PCB spills occurred in any of the facilities addressed in this HSA

*Describe methods in which spills were mitigated, if any*

No known PCB spills occurred in any of the facilities addressed in this HSA

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**Radiological Contaminants**

*Describe any potential, likely, or known radiological production or storage locations*

None of the buildings in this HSA are currently radiologically posted. In the early history of Building 331, a small R&D metallurgical laboratory was operated in the garage portion of the building. In the late 1950s, a truck being worked on in the garage was found to have contamination on the bed of the truck (cross contamination from hauling contaminated drums). No building contamination was identified. In the past, the fire Department side of Building 331 has, on occasion, found radiological contamination on fire fighting equipment, which has entered contaminated areas. When contamination was detected it was always cleaned.

During fire training exercises in Building 335, actual waste steams from Building 444 were frequently used as fuel for these training fires. Some of this waste contained depleted uranium.

Building 334 has not housed any radiological processes, but has had equipment installed in the machine shop from Building 444 and 881. Some hot spots of uranium were detected on the equipment and under the equipment during equipment removal in the 1980s. On a few occasions in the 1960s, uranium parts were escorted to building 334 for some specialty machine work. After this work was performed the machines were cleaned and the area surveyed. Building 334 is not radiologically posted.

Building C331, 331F, 331S, T334B, and T334D have no history of radiological contamination. See individual building histories above for a more detailed description of historical operations.

*Describe any potential, likely, or known spill locations (e.g., known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc.)*

Building 331 has several contaminated sanitary drains in the old metallurgical laboratory rooms.

*Describe methods in which spills were mitigated, if any*

No known spills.

*Describe any potential, likely, or known isotopes of concern (e.g., weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc.)*

The primary isotope of concern includes, but is not limited to depleted uranium. Other than sealed sources, there were no known mixed fission products or pure beta emitters used in any of the facilities addressed in the HSA.

*Describe any potential, likely, or known external facility contamination (e.g., stack release points, unfiltered ventilation, facility's physical location to known site releases, etc.)*

See section below for information on IHSSs PACs, and UBCs.

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**Environmental Restoration Concerns**

*Describe any ER concerns that could affect facility characterization (e g , IHSSs, PACs, UBCs)*

Building 331 is associated with or located near the following active IHSSs, PACs, and UBCs,

- 1) IHSS 300-134 -S "Reactive Metal Disposal Site South", Active
- 2) IHSS 300-703 "Building 331 north Area", NFA approved in 1992, CDPHE approved as proposed in 2001
- 3) IHSS 300-710 "Gasoline spill North of Building 331, NFA approved 1992, CDPHE approved as proposed in 2001
- 4) IHSS 300-711 "Nickel-Cadmium Battery Acid Spill Outside of Building 373" Proposed NFA HRR Quarterly update January 1994
- 5) IHSS 300-713 "Caustic Spill North of Building 331", " Proposed NFA HRR Quarterly update April, 1994
- 6) UBC-331 - A portion of Building 331 has a UBC under the old metallurgical lab

Building 334 is associated with or located near the following active IHSSs, PACs, and UBCs,

- 1) IHSS 300-709 "Transformer Leak - 334-1", Proposed NFA in 1996 (currently under review with regulatory agencies)
- 2) IHSS 300-156 1 "Building 371 Parking Lot", NFA approved in 2001

Building 335 is associated with or located near the following IHSSs, PACs, and UBCs,

- 1) IHSS 300-134-N "Lithium Metal Distraction Site", Active
- 2) IHSS 300-128 "Oil Burning Pit No 1", Active
- 3) IHSS 300-171 "Solvent Burning Ground", Active

Building 331F and 331S are on the edge of the border of IHSS 300-134-S "Reactive Metal Disposal Site South"  
Buildings C331, T334B, and T334D are not directly referenced in any IHSSs, PACs, and UBCs

**Additional Information**

*Describe any additional information that may be useful during facility characterization (e g , contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc )*

None

**References**

*Provide all sources of information utilized to gather data for facility history (e g , documents, files, interviews)*

Sources reviewed to complete this HSA were the RFETS Facility List, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases Building 331, 334, and 335 WSRICs, (Building C331, 331F, T334B, and T334D do not have WSRICs) In addition, a facility walkdown and interviews were performed



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Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
<b>Building 331</b>	44,500	0	2,800	0	900	TBD	Built-up Roofing 3,600 cu ft
<b>Building C331</b>	250	150	None	None	None	TBD	cargo containers are excluded from estimate
<b>Building 331F</b>	900	None	100	40	None	TBD	None
<b>Building 331S</b>	None	50	None	100	None	TBD	Asphalt 400, cargo containers are excluded from estimate
<b>Building 334</b>	85,500	0	5,900	0	1,800	TBD	Built-up Roofing 6,800 cu ft
<b>Trailer T334B</b>	None	400	500	800	1,000	TBD	None
<b>Trailer T334D</b>	None	275	250	350	450	TBD	None
<b>Building 335</b>	2500	None	600	900	300	TBD	None
<b>Further Actions</b> <i>Recommend any further actions, if any (e.g., characterization, decontamination, special handling, etc.)</i>  Begin the RLC/PDS process							
<b>Note:</b> This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations. SMEs should evaluate and/or verify all information during the RLC/PDS process. SMEs may need to review additional documentation and perform additional interviews. Information contained in this HSA only represents a "snapshot" in time. Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report. However, this report will not be amended, and the newer data will take precedence over the data in this report. Newer Data will appear in the RLCR/PDSR.							

Prepared By

Doug Bryant

Name

Signature

February 2002

Date

*For Doug Bryant*

## ATTACHMENT C

### Radiological Data Summaries and Survey Maps

**SURVEY UNIT 331-B-003**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B331 Fire Department Interior**

331-B-003  
PDS Data Summary

**Total Surface Activity Measurements**

	25	59	
	Number Required	Number Obtained	
MIN	-9.5	dpm/100 cm <sup>2</sup>	
MAX	61.7	dpm/100 cm <sup>2</sup>	
MEAN	7.0	dpm/100 cm <sup>2</sup>	
STD DEV	12.6	dpm/100 cm <sup>2</sup>	
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	

**Removable Activity Measurements**

	25	59	
	Number Required	Number Obtained	
MIN	-0.6	dpm/100 cm <sup>2</sup>	
MAX	4.5	dpm/100 cm <sup>2</sup>	
MEAN	0.7	dpm/100 cm <sup>2</sup>	
STD DEV	1.2	dpm/100 cm <sup>2</sup>	
TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>	

**SURVEY UNIT 331-B-003  
TSA - DATA SUMMARY**

Manufacturer	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model	DP 6	DP-6	DP 6	DP 6	DP-6	DP-6
Instrument ID#	1	2	3	4	5	10
Serial #	1513	3126	3250	2404	3125	1261
Cal Due Date	4/30/03	6/4/03	7/13/03	3/25/03	4/21/03	6/19/03
Analysis Date	2/13/03	2/13/03	2/13/03	2/13/03	2/13/03	2/13/03
Alpha Eff (c/d)	0.219	0.224	0.219	0.213	0.211	0.207
Alpha Bkgd (cpm)	2.7	1.3	2.0	0.0	2.7	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
WDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0	48.0	48.0	48.0

Manufacturer	NE Tech	NE Tech	NE Tech
Model	DP 6	DP 6	DP 6
Instrument ID#	11	12	13
Serial #	2404	3125	1261
Cal Due Date	3/25/03	4/21/03	6/19/03
Analysis Date	2/17/03	2/17/03	2/17/03
Alpha Eff (c/d)	0.213	0.211	0.207
Alpha Bkgd (cpm)	4.7	2.7	2.7
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
WDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1</sup>
1	2	6.0	26.8	4.0	17.9	14.0
2	11	1.3	6.1	1.3	6.1	-6.7
3	2	10.0	44.6	8.0	35.7	31.8
4	3	5.3	24.2	2.0	9.1	11.4
5	1	8.0	36.5	5.3	24.2	23.7
6	2	7.3	32.6	4.7	21.0	19.8
7	2	4.7	21.0	7.3	32.6	8.2
8	2	4.7	21.0	6.7	29.9	8.2
9	1	4.7	21.5	4.7	21.5	8.7
10	2	6.0	26.8	2.7	12.1	14.0
11	1	8.0	36.5	5.3	24.2	23.7
12	11	2.7	12.7	3.3	15.5	-0.1
13	1	2.0	9.1	6.0	27.4	3.7
14	12	4.7	22.3	0.7	3.3	9.5
15	1	5.3	24.2	5.3	24.2	11.4
16	10	3.3	15.9	2.7	13.0	3.1
17	3	4.0	18.3	4.7	21.5	5.5
18	3	6.0	27.4	4.7	21.5	14.6
19	3	2.7	12.3	2.7	12.3	-0.5
20	3	6.0	27.4	4.7	21.5	14.6
21	3	5.3	24.2	3.3	15.1	11.4
22	4	4.7	22.1	3.3	15.5	9.3
23	5	2.7	12.8	0.7	3.3	0.0

**SURVEY UNIT 331-B-003  
TSA - DATA SUMMARY**

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	I AB Gross Counts (cpm)	I AB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2) <sup>1</sup>
24	4	40	188	07	33	60
25	5	13	62	33	156	-66
26	5	13	62	27	128	-66
27	4	13	61	27	127	-67
28	4	20	94	20	94	34
29	5	13	62	40	190	-66
30	4	27	127	33	155	-01
31	3	60	274	20	91	146
32	3	53	242	33	151	114
33	3	40	183	27	123	55
34	12	40	190	20	95	62
35	3	13	59	60	274	-69
36	3	73	333	13	59	205
37	12	07	33	40	190	95
38	2	33	147	27	121	19
39	4	47	221	07	33	93
40	3	27	123	13	59	-05
41	4	107	502	20	94	374
42	3	80	365	27	123	237
43	2	167	746	21	94	617
44	5	27	128	13	62	00
45	5	40	190	40	190	62
46	11	20	94	00	00	-34
47	11	33	155	13	61	27
48	11	67	315	20	94	186
49	11	20	94	00	00	-34
50	11	13	61	00	00	-67
51	12	53	251	13	62	123
52	12	33	156	20	95	28
53	12	20	95	07	33	-33
54	12	33	156	00	00	28
55	13	20	97	07	34	-31

**SURVEY UNIT 331-B-003  
TSA - DATA SUMMARY**

Sample Location Number	Instrument ID#	Sample Cross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Cross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2) <sup>1</sup>
56	13	13	63	20	97	65
57	12	27	128	13	62	00
58	13	43	208	13	63	80
59	12	33	156	07	33	28

<sup>1</sup> Average LAB used to subtract from Gross Sample Activity

128	Sample LAB Average
MIN	95
MAX	617
MEAN	70
SD	126
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

24 QC	11	13	61	27	127	61
39 QC	13	20	97	20	97	97
48 QC	11	80	376	20	94	376
51 QC	13	20	97	00	00	97

<sup>1</sup> Average QC LAB used to subtract from Gross Sample Activity

00	QC LAB Average
MIN	97
MAX	97
MEAN	97
Transuranic DCGL <sub>w</sub>	100

**SURVEY UNIT 331-B-003  
RSC - DATA SUMMARY**

Manufacturer	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	6	7	8	9	14	15
Serial #	767	1164	833	952	767	1164
Cal Due Date	5/13/03	6/17/03	2/28/03	7/9/03	5/13/03	6/17/03
Analysis Date	2/13/03	2/13/03	2/13/03	2/13/03	2/17/03	2/17/03
Alpha Eff (c/d)	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.1	0.0	0.0	0.1	0.2
Sample Time (min)	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10
MDC (dpm/100cm <sup>2</sup> )	9.0	9.0	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	6	0	0.0
2	7	1	1.2
3	8	0	0.0
4	9	0	0.0
5	6	1	1.5
6	7	1	1.2
7	8	0	0.0
8	9	0	0.0
9	6	1	1.5
10	7	1	1.2
11	8	1	1.5
12	9	0	0.0
13	6	0	0.0
14	14	1	1.2
15	8	0	0.0
16	9	0	0.0
17	6	0	0.0
18	7	0	-0.3
19	8	0	0.0
20	9	0	0.0
21	6	3	4.5
22	7	0	-0.3
23	8	0	0.0
24	9	1	1.5
25	6	1	1.5
26	7	1	1.2
27	8	1	1.5
28	9	0	0.0
29	6	2	3.0
30	7	0	-0.3
31	8	1	1.5
32	9	1	1.5
33	6	0	0.0



**SURVEY UNIT 331-B-003  
RSC - DATA SUMMARY**

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
34	7	0	0.3
35	8	1	1.5
36	9	0	0.0
37	6	3	4.5
38	7	1	1.2
39	8	0	0.0
40	9	1	1.5
41	6	1	1.5
42	7	0	0.3
43	8	1	1.5
44	9	0	0.0
45	6	1	1.5
46	14	0	-0.3
47	15	0	-0.6
48	14	0	0.3
49	15	0	0.6
50	14	3	4.2
51	15	0	0.6
52	14	0	-0.3
53	15	1	0.9
54	14	1	1.2
55	15	0	0.6
56	14	1	1.2
57	15	0	-0.6
58	14	0	-0.3
59	15	0	-0.6
		MIN	-0.6
		MAX	4.5
		MEAN	0.7
		SD	1.2
		Transuranic DCGL <sub>w</sub>	20

# PRE-DEMOLITION SURVEY FOR BUILDING 331FD

Survey Area 3

Survey Unit: 331-B-003

Classification. 3

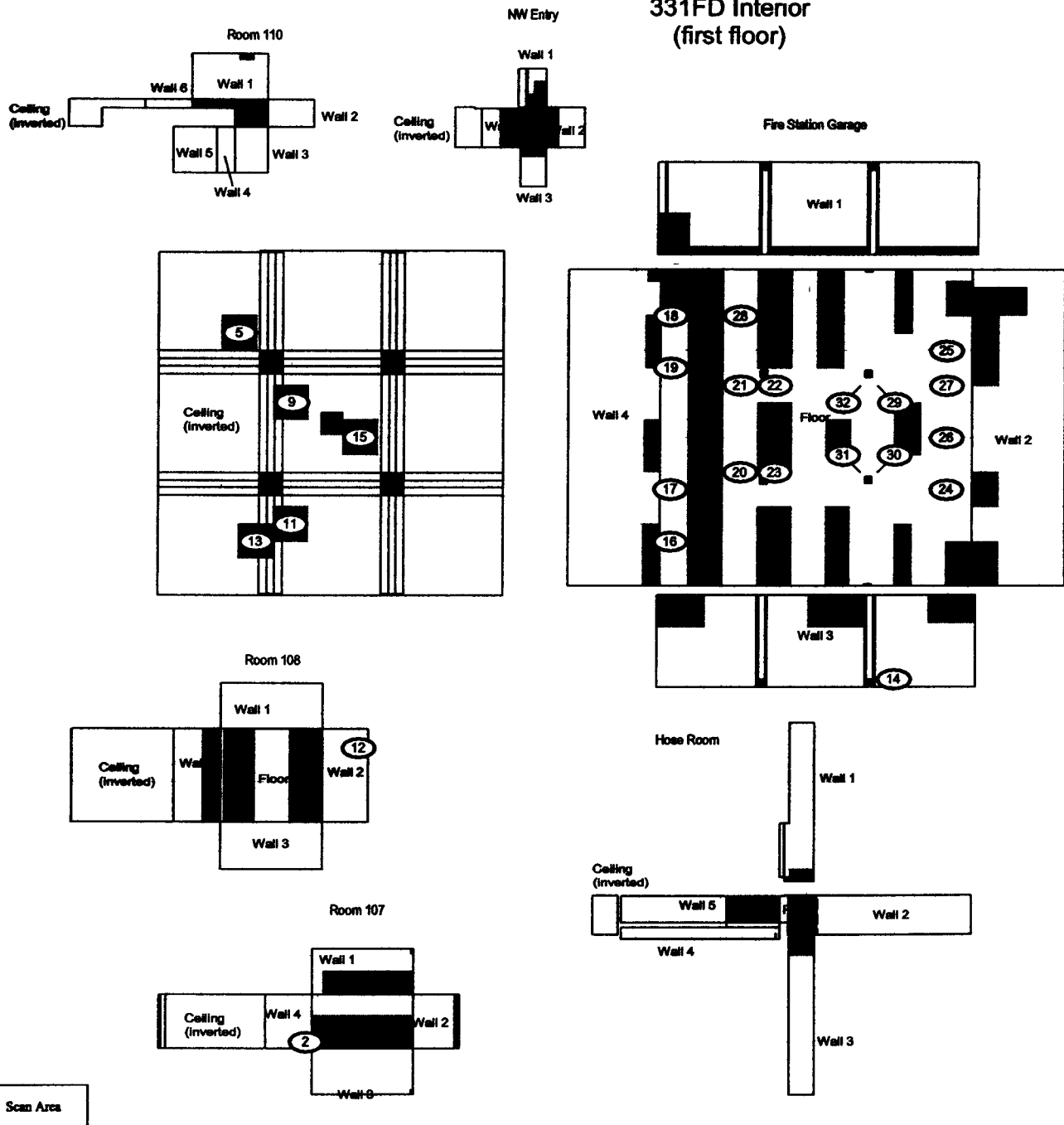
Building 331FD

Survey Unit Description Fire Department Interior

Total Area 3323 sq m

Total Floor Area 792 sq m

PAGE 1 OF 3



## SURVEY MAP LEGEND

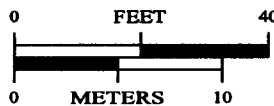
- ⊙ Sensor & TSA Location
- ⬢ Sensor, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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## Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s)  
1,2,3,4,5,11,12,13



1 inch = 30 feet 1 sq m = 1 sq m

U S Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GRS Dept. 303-696-7707

Prepared for:



**CH2MHILL**  
Communications Group

MAP ID 02-0589/331-B-IN1-Scn

April 9, 2003

# PRE-DEMOLITION SURVEY FOR BUILDING 331 FD

Survey Area. 3

Survey Unit: 331-B-003

Classification 3

Building 331FD

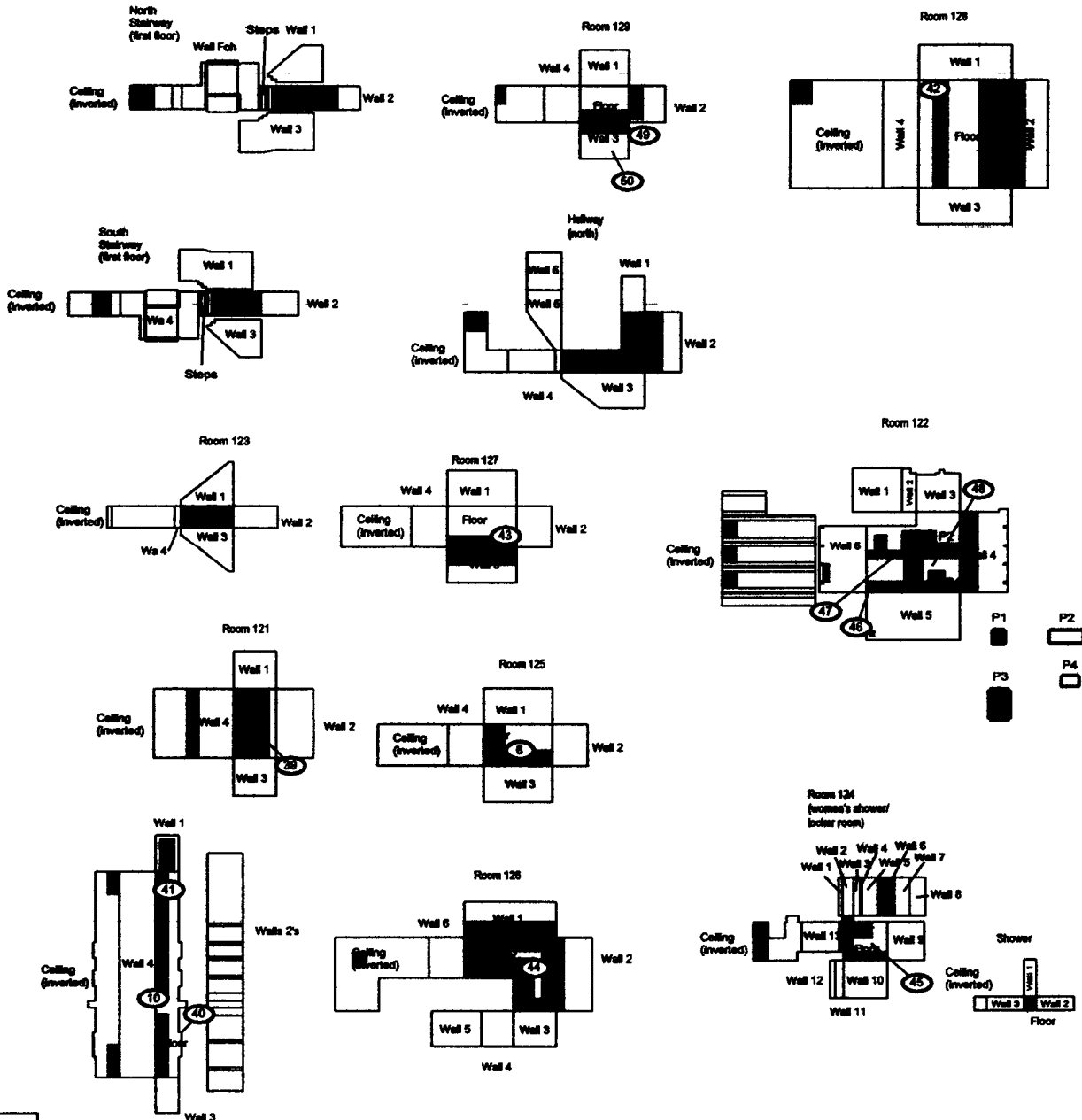
Survey Unit Description Fire Department Interior

Total Area 3323 sq m

Total Floor Area. 792 sq m.

PAGE 2 OF 3

## 331FD Interior (first floor)



Scan Area

### SURVEY MAP LEGEND

- Smear & TSA Location
- ◇ Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

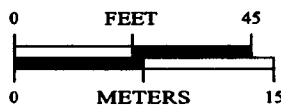
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### Scan Survey Information

Survey Instrument ID #(s) & RCT ID #(s)

1,2,3,4,5,11,12,13



1 inch = 36 feet 1 grid sq = 1 sq m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-806 7707

Prepared for



**CH2MHILL**  
Communications Group

MAP ID 02-0589/331-B-IN2-Scn

April 9, 2003

# PRE-DEMOLITION SURVEY FOR BUILDING 331 FD

Survey Area 3

Survey Unit: 331-B-003

Classification 3

Building: 331FD

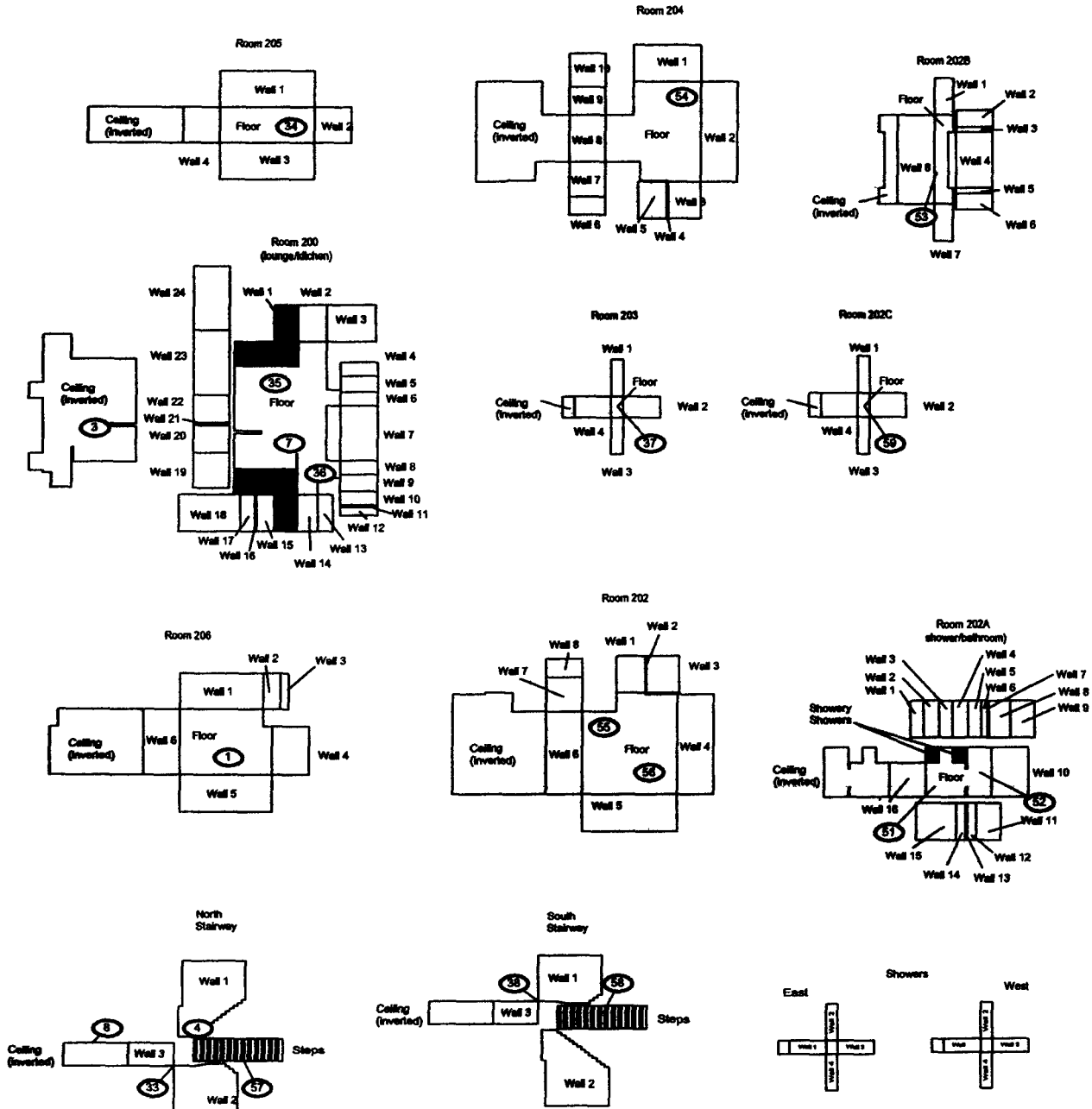
Survey Unit Description Fire Department Interior

Total Area 3323 sq m

Total Floor Area 792 sq. m

PAGE 3 OF 3

## 331FD Interior (second floor)



<b>SURVEY MAP LEGEND</b> <ul style="list-style-type: none"> <li>Smear &amp; TSA Location</li> <li>Smear TSA &amp; Sample Location</li> <li>Open/Inaccessible Area</li> <li>Area in Another Survey Unit</li> </ul>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET nor any agency thereof, nor any of their employees, makes any warranty express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p><b>Scan Survey Information</b>  <b>Survey Instrument ID #(s) RCT ID #(s)</b>  <b>1,2,3,4,5,11,12,13</b></p>	<p><b>N</b></p> <p>0 FEET 45</p> <p>0 METERS 15</p> <p>1 inch = 36 feet 1 grid sq = 1 sq m.</p>	<p>U.S. Department of Energy          Rocky Flats Environmental Technology Site</p> <p>Prepared by: GIS Dept 303-905-7707</p> <p>Prepared for:</p> <p><b>CH2MHILL</b>          Communications Group</p> <p>MAP ID 02-0589/331-IN3-Scn</p> <p>April 8, 2003</p>
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**SURVEY UNIT C331-B-004**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: C331 Interior**

C331-B-004  
PDS Data Summary

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	25	25		25	
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	-10.8	dpm/100 cm <sup>2</sup>	MIN	-0.9	dpm/100 cm <sup>2</sup>
MAX	28.0	dpm/100 cm <sup>2</sup>	MAX	0.9	dpm/100 cm <sup>2</sup>
MEAN	6.0	dpm/100 cm <sup>2</sup>	MEAN	-0.3	dpm/100 cm <sup>2</sup>
STD DEV	11.5	dpm/100 cm <sup>2</sup>	STD DEV	0.7	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

**SURVEY UNIT C331-B-004  
TSA - DATA SUMMARY**

Manufacturer	NE Tech	NE Tech
Model	DP-6	DP-6
Instrument ID#	1	2
Serial #	1513	1261
Cal Due Date	4/30/03	6/19/03
Analysis Date	2/10/03	2/10/03
Alpha Eff (c/d)	0.219	0.207
Alpha Bkgd (cpm)	4.0	0.7
Sample Time (min)	15	15
LAB Time (min)	15	15
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1</sup>
1	1	33	15.1	4.0	18.3	1.0
2	1	33	15.1	3.3	15.1	1.0
3	1	8.0	36.5	3.3	15.1	22.5
4	1	5.3	24.2	4.7	21.5	10.2
5	1	3.3	15.1	2.7	12.3	1.0
6	1	6.0	27.4	2.0	9.1	13.4
7	1	7.3	33.3	4.7	21.5	19.3
8	1	2.0	9.1	5.3	24.2	-4.9
9	1	0.7	3.2	2.7	12.3	10.8
10	1	6.0	27.4	6.0	27.4	13.4
11	2	8.7	42.0	2.7	13.0	28.0
12	1	2.0	9.1	4.7	21.5	-4.9
13	1	4.7	21.5	2.7	12.3	7.4
14	1	2.0	9.1	2.7	12.3	-4.9
15	1	3.3	15.1	9.3	42.5	1.0
16	1	7.3	33.3	1.3	5.9	19.3
17	1	6.7	30.6	1.3	5.9	16.6
18	1	9.0	41.1	2.7	12.3	27.1
19	2	4.7	22.7	1.3	6.3	8.7
20	2	1.3	6.3	2.0	9.7	7.8
21	2	4.7	22.7	2.0	9.7	8.7
22	2	3.3	15.9	1.3	6.3	1.9
23	2	2.0	9.7	0.7	3.4	-4.4
24	2	1.3	6.3	2.0	9.7	7.8
25	2	2.0	9.7	0.7	3.4	-4.4

<sup>1</sup> Average LAB used to subtract from Gross Sample Activity

14.0	Sample LAB Average
MIN	10.8
MAX	28.0
MEAN	6.0
SD	11.5
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

6 QC	2	2.7	13.0	4.0	19.3	0.4
11 QC	1	2.0	9.1	1.3	5.9	3.5

Average QC LAB used to subtract from Gross Sample Activity

12.6	QC LAB Average
MIN	1.5
MAX	0.4
MEAN	1.5
Transuranic DCGL <sub>w</sub>	100

**SURVEY UNIT C331-B-004  
RSC - DATA SUMMARY**

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC 4	SAC-4	SAC-4	SAC-4
Instrument ID#	3	4	5	6
Serial #	767	1164	833	952
Cal Due Date	5/13/03	6/17/03	2/28/03	7/9/03
Analysis Date	2/10/03	2/10/03	2/10/03	2/10/03
Alpha Eff (c/d)	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.3	0.2	0.3	0.2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm <sup>2</sup> )	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	3	0	-0.9
2	4	1	0.9
3	5	0	-0.9
4	6	0	0.6
5	3	1	0.6
6	4	0	-0.6
7	5	1	0.6
8	6	0	-0.6
9	3	0	-0.9
10	4	0	0.6
11	5	0	-0.9
12	6	0	-0.6
13	3	1	0.6
14	4	0	-0.6
15	5	0	-0.9
16	6	0	-0.6
17	3	0	-0.9
18	4	0	-0.6
19	5	0	-0.9
20	6	0	-0.6
21	3	1	0.6
22	4	0	-0.6
23	5	0	-0.9
24	6	1	0.9
25	3	1	0.6
		MIN	0.9
		MAX	0.9
		MEAN	0.3
		SD	0.7
		Transuranic DCGL <sub>w</sub>	20

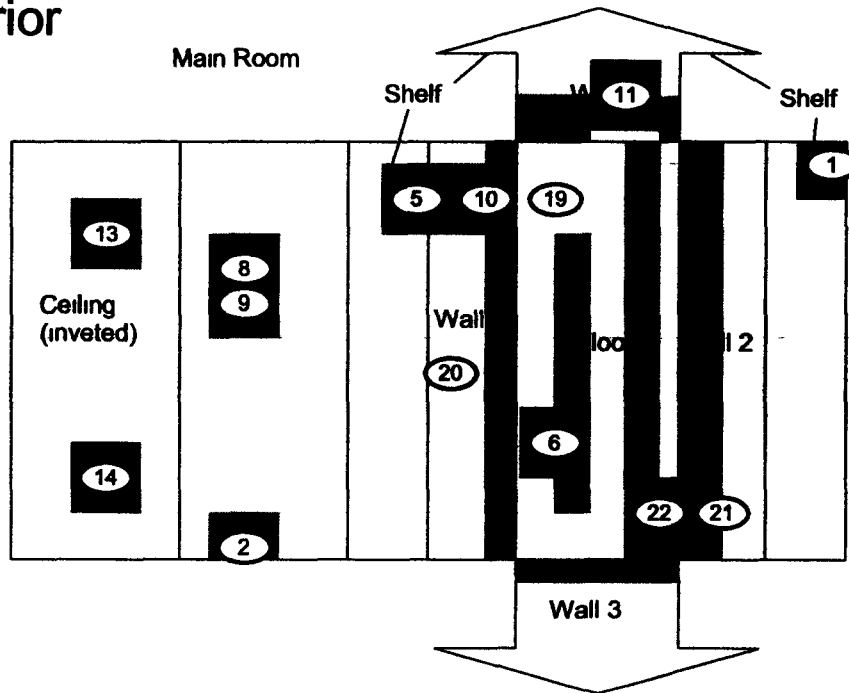


# PRE-DEMOLITION SURVEY FOR BUILDING C331

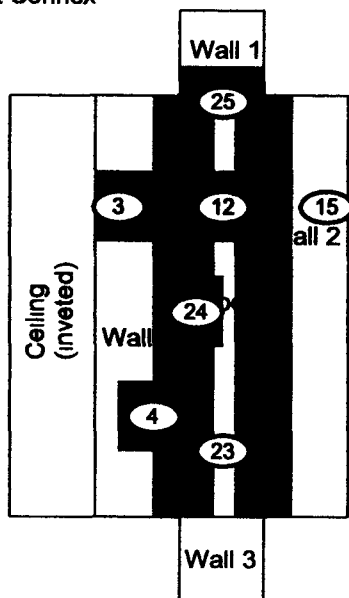
Survey Area 3      Survey Unit: C331-B-004      Classification: 3  
 Building: C331  
 Survey Unit Description Interior of Building  
 Total Area 586 sq m      Total Floor Area 115 sq m

PAGE 1 OF 1

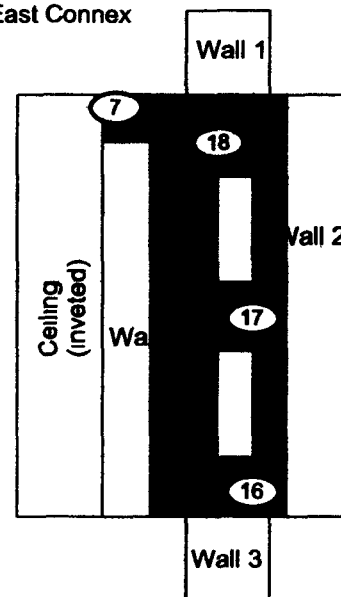
## C331 Interior



### West Connex



### East Connex



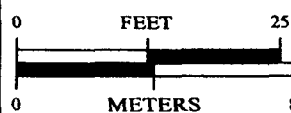
### SURVEY MAP LEGEND

- ② Sensor & TSA Location
- ⬢ Sensor, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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Scan Survey Information  
 Survey Instrument ID #(s) & RCT ID #(s)  
 1 & 2



1 inch = 18 feet 1 sq m = 1 sq m

U.S. Department of Energy  
 Rocky Flats Environmental Technology Site

Prepared by: GIS Dept 303-686-7797

Prepared for:



**CH2MHILL**  
 Communications Group

MAP ID 02-0589/C331-IN-SC

April 9, 2003

## ATTACHMENT D

### Chemical Data Summaries and Sample Maps

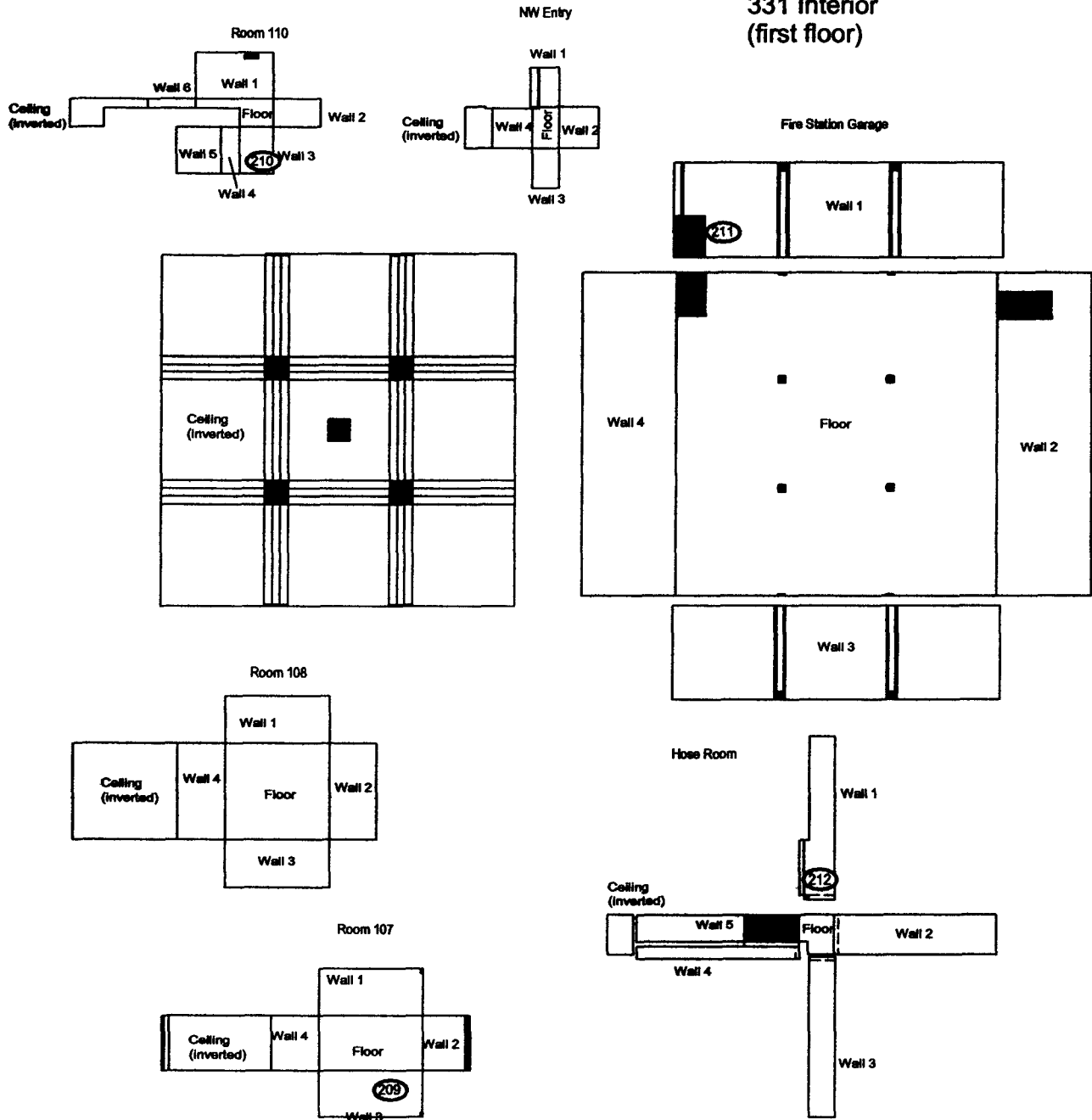
### Asbestos Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ( $\mu\text{g}/100\text{ cm}^2$ )
<b>Building 331 (Fire Department)</b>				
331-03252003-315-209	9	107	Gray window glazing, south wall	Trace Chrysotile, 0.25 % Point Count
331-03252003-315-210	10	110	White and light blue paint on CMU south wall	Trace Chrysotile 0.25 % Point Count
331-03252003-315-211	11	112	White window glazing, south wall	None Detected
331-03252003-315-212	12	112A	Beige paint on CMU south wall	None Detected
<b>Building C331</b>				
C331-03252003-315-201	1	Main	Gray acoustical tile in "Armstrong" package	None Detected
C331-03252003-315-202	2	West Connex	Asphalt roofing shingle	None Detected

# CHEMICAL SAMPLE MAP

## Building 331FD (Fire Department) Interior Asbestos

PAGE 1 OF 1



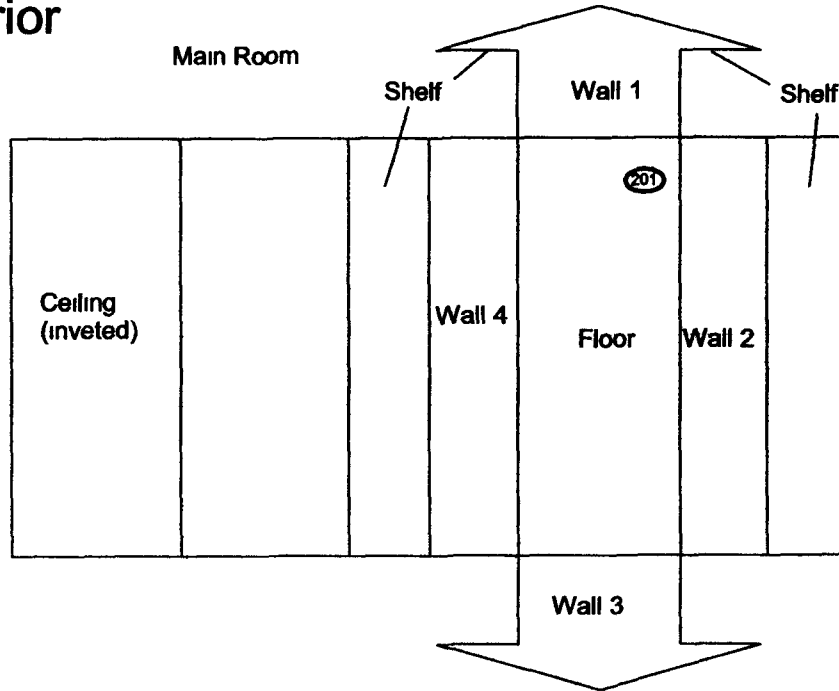
<p><b>SURVEY MAP LEGEND</b></p> <ul style="list-style-type: none"> <li>Asbestos Sample Location</li> <li>Beryllium Sample Location</li> <li>Lead Sample Location</li> <li>RCRA/CERCLA Sample Location</li> <li>PCB Sample Location</li> </ul>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;HT nor any agency thereof, nor any of their employees, makes any warranty express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights</p> <p>Open/Inaccessible Area</p> <p>Area in Another Survey Unit</p>	<p><b>N</b></p> <p>0 FEET 40</p> <p>0 METERS 10</p> <p>1 inch = 30 feet 1 grid sq = 1 sq m</p>	<p>U S Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: GHS Dept 303-686-7707 Prepared for:</p> <p><b>CH2MHILL</b> Communications &amp; IT</p> <p>MAP ID 02-0589/331-IN1-ASB March 11, 2003</p>
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# CHEMICAL SAMPLE MAP

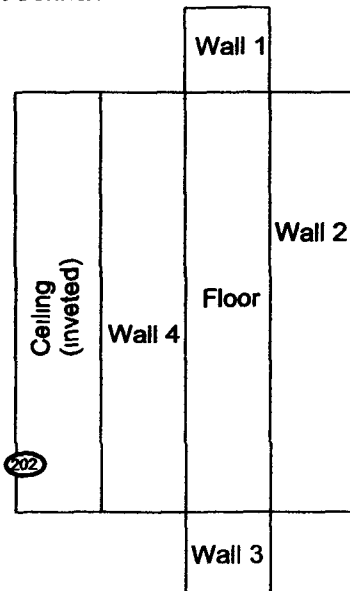
Building C331 Interior  
Asbestos

PAGE 1 OF 1

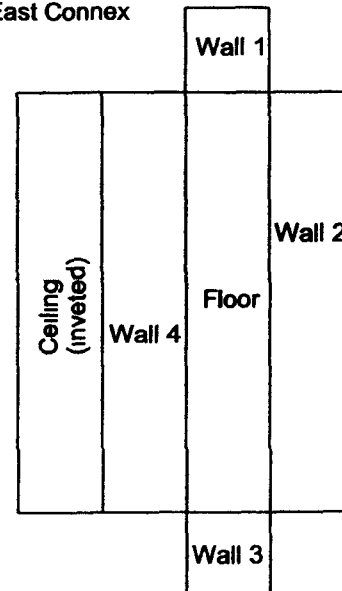
## C331 Interior



### West Connex



### East Connex



<p><b>SURVEY MAP LEGEND</b></p> <ul style="list-style-type: none"> <li>Asbestos Sample Location</li> <li>Beryllium Sample Location</li> <li>Lead Sample Location</li> <li>RCRA/CERCLA Sample Location</li> <li>PCB Sample Location</li> </ul>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET nor any agency thereof nor any of their employees, makes any warranty express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights</p> <p>Open/Inaccessible Area</p> <p>Area in Another Survey Unit</p>	<p>N</p> <p>↑</p> <p>0 FEET 25</p> <p>0 METERS 8</p> <p>1 inch = 18 feet 1 sqd sq = 1 sq m</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by GIS Dept 303-686-7707 Prepared for</p> <p>CH2MHILL</p> <p>MAP ID 02-0589/C331-IN-ASB April 9, 2003</p>
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## Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ( $\mu\text{g}/100\text{ cm}^2$ )
Building 331 (Fire Department)				
331-03252003-315-102	2	202B	On carpet	<0.1
331-03252003-315-107	7	North Stairway	On 12" vinyl floor tile	<0.1
331-03252003-315-109	9	129	2' x 4' plastic ceiling tile	<0.1
331-03252003-315-111	11	206	On white CMU north wall	<0.1
331-03252003-315-112	12	128	On carpet	<0.1
331-03252003-315-113	13	107	On white paint of concrete ceiling	<0.1
331-03252003-315-114	14	204	On white CMU west wall	<0.1
331-03252003-315-117	17	204	2' x 4' white acoustical drop ceiling tile	<0.1
331-03252003-315-119	19	Hallway	On white CMU, west wall	<0.1
331-03252003-315-120	20	112	On concrete floor	<0.1
331-03252003-315-121	21	107	On 12" vinyl floor tile	<0.1
331-03252003-315-122	22	202	On carpet	<0.1
331-03252003-315-124	24	112A	On gray CMU south wall	<0.1
331-03252003-315-125	25	110	On concrete floor	<0.1
331-03252003-315-126	26	112	On white concrete, west wall	<0.1
331-03252003-315-127	27	205	On carpet	<0.1
331-03252003-315-128	28	112A	On gray CMU, west wall	<0.1
331-03252003-315-130	30	122	On concrete floor	<0.1
331-03252003-315-131	31	Stairway	On white CMU, north wall	<0.1
331-03252003-315-132	32	128	2' x 4' white acoustical drop ceiling tile	<0.1
331-03252003-315-133	33	123	On green CMU	<0.1
331-03252003-315-135	35	108	On 9" vinyl floor tile	<0.1
331-03252003-315-136	36	202	2' x 4' white acoustical drop ceiling tile	<0.1
331-03252003-315-137	37	202C	On yellow CMU west wall	<0.1
331-03252003-315-138	38	120	2' x 4' plastic drop ceiling	<0.1
331-03252003-315-139	39	204	2' x 4' white acoustical drop ceiling tile	<0.1
331-03252003-315-140	40	112	On concrete floor	<0.1
331-03252003-315-141	41	126	On carpet	<0.1
331-03252003-315-142	42	112	On locker, east wall	<0.1
331-03252003-315-143	43	121	On drywall, east wall	<0.1
331-03252003-315-144	44	112	On white concrete, east wall	<0.1
331-03252003-315-145	45	127	On white CMU, east wall	<0.1
331-03252003-315-146	46	200	On white CMU, east wall	<0.1
331-03252003-315-149	49	120	On brown CMU	<0.1
331-03252003-315-150	50	204	On white CMU, south wall	<0.1

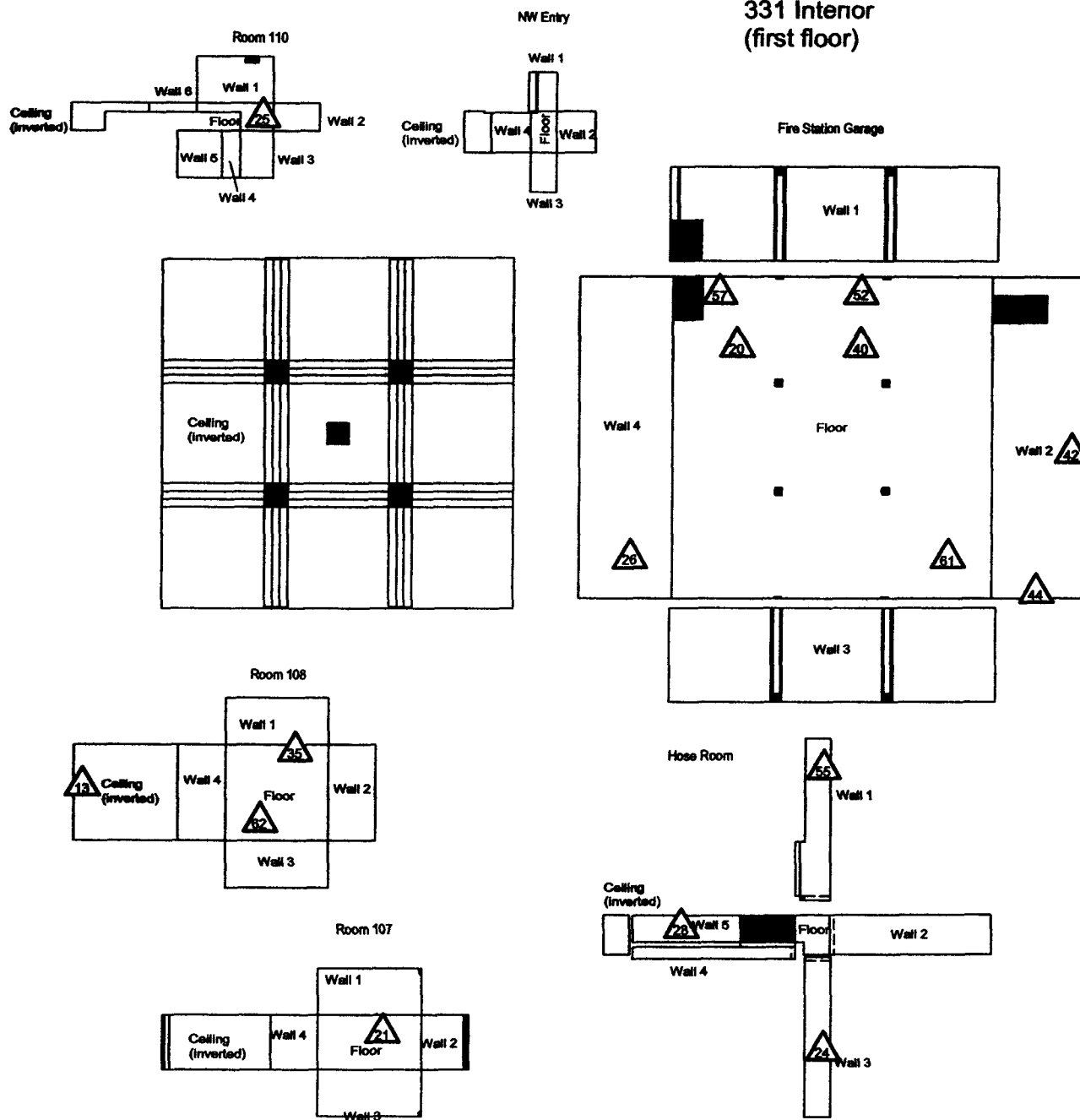
## Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ( $\mu\text{g}/100\text{ cm}^2$ )
331-03252003-315-151	51	120A	On white CMU	<0.1
331-03252003-315-152	52	112	On concrete floor	<0.1
331-03252003-315-154	54	202	On carpet	<0.1
331-03252003-315-155	55	112A	On gray CMU, north wall	<0.1
331-03252003-315-157	57	112	On concrete floor	<0.1
331-03252003-315-158	58	124	White drywall on ceiling	<0.1
331-03252003-315-159	59	Hallway	On white CMU, west wall	<0.1
331-03252003-315-160	60	Stairway	On brown paint of stairs	<0.1
331-03252003-315-161	61	112	On concrete floor	<0.1
331-03252003-315-162	62	108	On 9" vinyl floor tile	<0.1
331-03252003-315-163	63	200	2' x 4' white acoustical drop ceiling tile	<0.1
331-03252003-315-164	64	121	On white drywall, west wall	<0.1
331-03252003-315-167	67	121	On carpet	<0.1
331-03252003-315-168	68	206	On carpet	<0.1
<b>Building C331</b>				
C331-03252003-315-101	1	Main	On concrete floor	<0.1
C331-03252003-315-102	2	Main	On Tensco metal file cabinet	<0.1
C331-03252003-315-103	3	Main	On metal shelf over work bench	<0.1
C331-03252003-315-104	4	West Connex	Top of metal storage cabinet	<0.1
C331-03252003-315-105	5	East Connex	On top shelf	<0.1

# CHEMICAL SAMPLE MAP

Building: 331FD (Fire Department) Interior  
Beryllium

PAGE 1 OF 3



<p><b>SURVEY MAP LEGEND</b></p> <ul style="list-style-type: none"> <li>Asbestos Sample Location</li> <li>Beryllium Sample Location</li> <li>Lead Sample Location</li> <li>RCRA/CERCLA Sample Location</li> <li>PCB Sample Location</li> </ul>	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET nor any agency thereof, nor any of their employees, makes any warranty express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p>Open/Inaccessible Area</p> <p>Area in Another Survey Unit</p>	<p>N</p> <p>0 40 FEET</p> <p>0 10 METERS</p> <p>1 inch = 30 feet 1 sq m = 1 sq m</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by GIS Dept 303-686-7707</p> <p>Prepared for</p> <p>CH2MHILL Communication Group</p> <p>MAP ID 02-0589/331-IN1-BE</p> <p>March 11, 2003</p>
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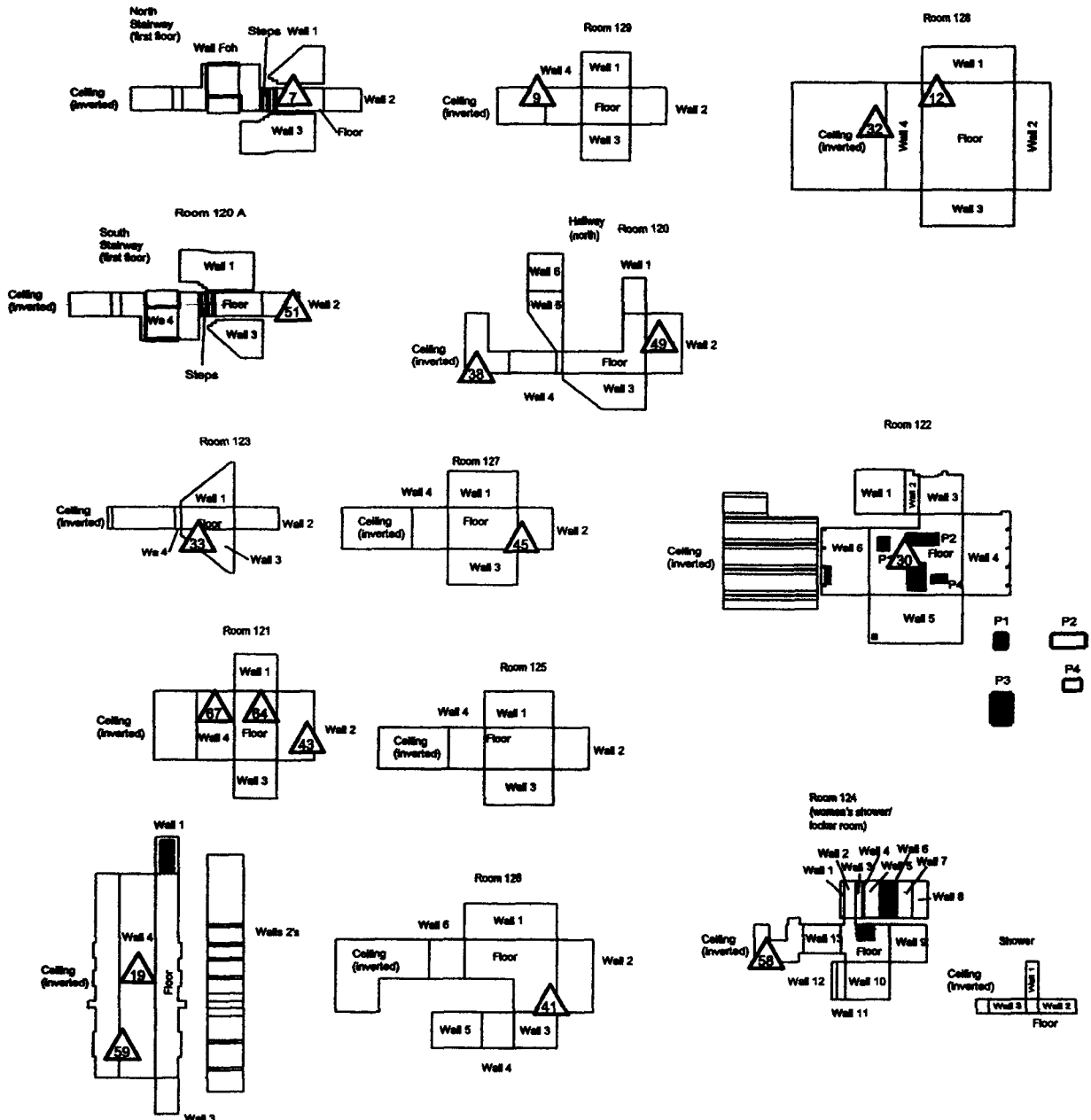


# CHEMICAL SAMPLE MAP

Building: 331FD ( Fire Department) Interior  
Beryllium

PAGE 2 OF 3

## 331 Interior (first floor)



### SURVEY MAP LEGEND

- ⊙ Asbestos Sample Location
- △ Beryllium Sample Location
- Lead Sample Location
- ◇ RCRA/CERCLA Sample Location
- ⊙ PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit

N



1 inch = 36 feet 1 sqd sq = 1 sq m

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-486-7707

Prepared for:



**CH2MHILL**  
Communications Group

MAP ID 02-0589/331-IN2-BE

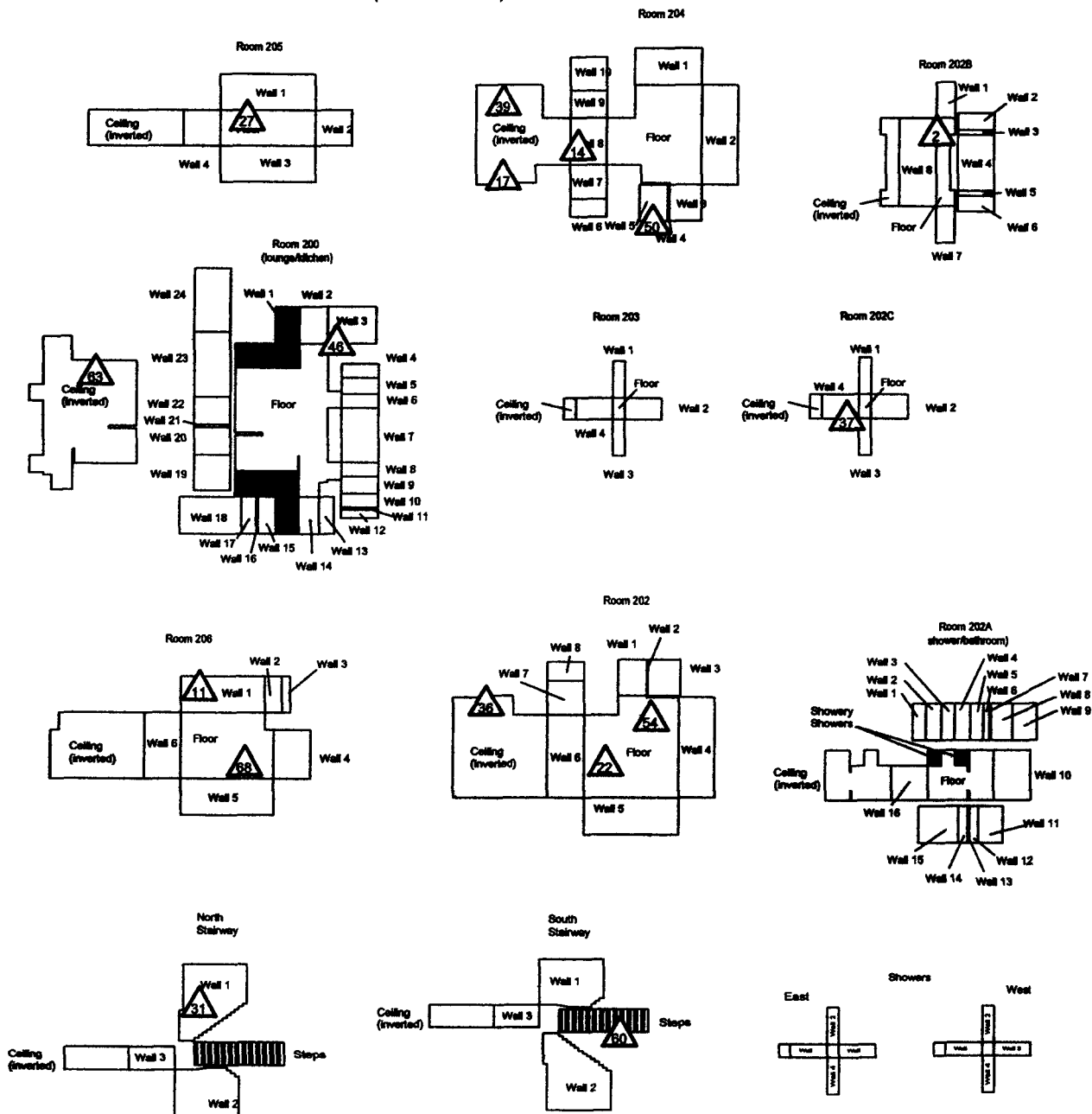
March 11, 2003

# CHEMICAL SAMPLE MAP

Building: 331FD (Fire Department) Interior  
Beryllium

PAGE 3 OF 3

## 331 Interior (second floor)



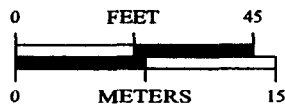
### SURVEY MAP LEGEND

- ⊙ Asbestos Sample Location
- ▲ Beryllium Sample Location
- ◻ Lead Sample Location
- ◊ RCRA/CERCLA Sample Location
- ⊗ PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 36 feet 1 sq ft = 1 sq m

U S Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-806-7707

Prepared for



MAP ID 02-0589/331-IN3-BE

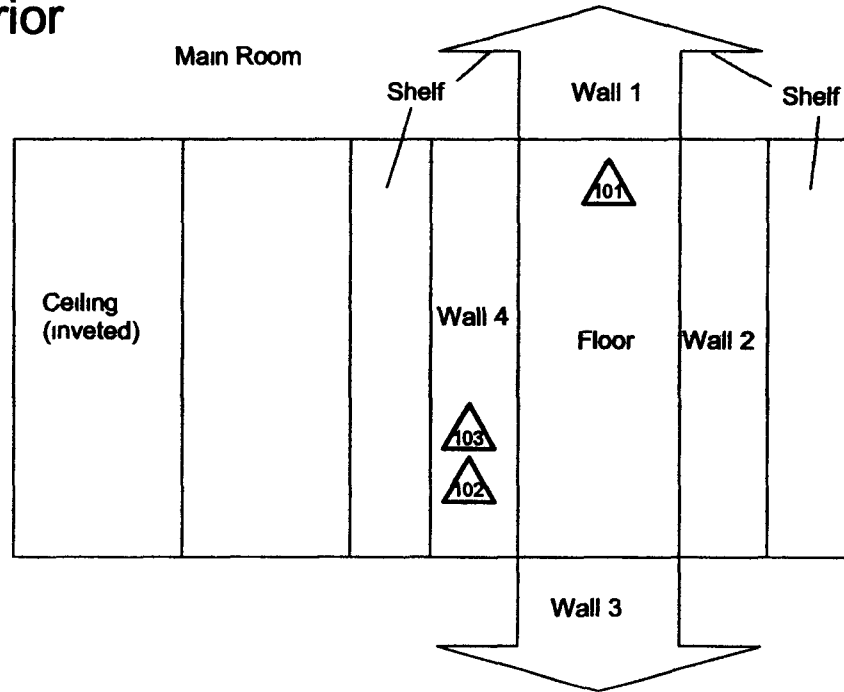
March 11, 2003

# CHEMICAL SAMPLE MAP

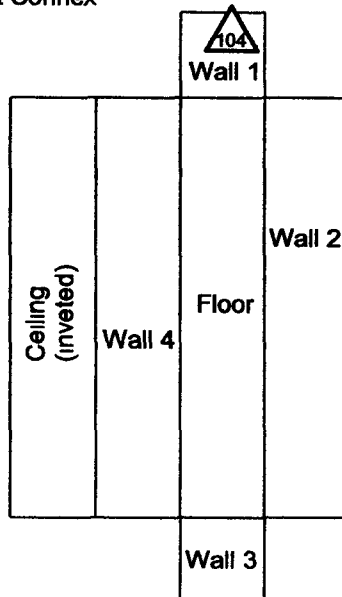
Building C331 Interior  
Beryllium

PAGE 1 OF 1

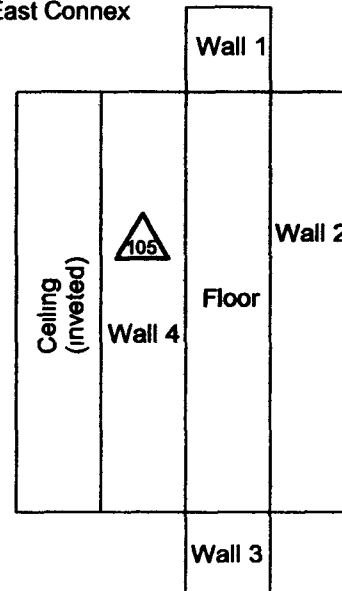
## C331 Interior



### West Connex



### East Connex



#### SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 18 feet 1 grid sq = 1 sq m

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Prepared by GIS Dept 303-606-7707

Prepared for:



MAP ID 02-0589/C331-IN-BE

March 11, 2003

# ATTACHMENT E

## Data Quality Assessment (DQA) Detail

## DATA QUALITY ASSESSMENT (DQA)

### VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically asbestos and beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed, the radiological survey assessment is provided in Table E-1, asbestos in E-2, and beryllium in E-3. A data completeness summary for all results is given in Table E-4.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project Files. This report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Buildings 331FD and C331 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic DCGL<sub>w</sub> (100 dpm/100cm<sup>2</sup>) and the Uranium DCGL<sub>w</sub> (5,000 dpm/100cm<sup>2</sup>) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design (for those survey units performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

### SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

All beryllium results were less than associated action levels (0.2 µg/100cm<sup>2</sup>) also confirming a Type 1 facility classification.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits. All results meet the PDS unrestricted release criteria.

Chain of Custody was intact, documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facilities. On this basis, Buildings 331FD and C331 meet the unrestricted release criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – Buildings 331FD and C331

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)	
QUALITY REQUIREMENTS			
	Parameters	Measure	frequency
ACCURACY	initial calibrations	90%<x<110%	≥1
	daily source checks	80%<x<120%	≥1/day
	local area background Field	Typically < 10 dpm	≥1/day
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals
REPRESENTATIVENESS	MARSSIM methodology Survey Units 331-B-003, C331-B-004 (interior) and EXT-B-001 (exterior)	Statistical and biased	NA
	Survey Maps	NA	NA
	Controlling Documents (Characterization Package, RSPs)	qualitative	NA
COMPARABILITY	units of measure	dpm/100cm <sup>2</sup>	NA
COMPLETENESS	Plan vs Actual surveys usable results vs unusable	>95% >95%	NA
SENSITIVITY	detection limits	TSA ≤50 dpm/100cm <sup>2</sup> RA ≤10 dpm/100cm <sup>2</sup>	all measures
		COMMENTS	
		Multi-point calibration through the measurement range encountered in the field, programmatic records	
		Performed daily/within range	
		All local area backgrounds were within expected ranges (i.e. no elevated anomalies)	
		N/A	
		Random w/ statistical confidence	
		Random and biased measurement locations controlled/mapped to ± 1m	
		Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files), thorough documentation of the planning, sampling/analysis process, and data reduction into formats	
		Use of standardized engineering units in the reporting of measurement results	
		See Table E-4 for details	
		RLC performed to PDS MDAs ≤ 50% DCGL <sub>w</sub> per MARSSIM guidelines	

Table E-2 V&V of Asbestos Results – Buildings 331FD and C331

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
ASBESTOS	METHOD EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
		RIN ---->	RIN03Z1261	
QUALITY REQUIREMENT		Measure	Frequency	
ACCURACY	Calibrations Initial/continuing	below detectable amounts	≥ 1	Semi-quantitative, per (microscopic) visual estimation
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 6 samples	Semi-quantitative, per (microscopic) visual estimation
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact completed paperwork, containers w/ custody seals
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures maps, etc )	Qualitative	NA	See original Chemical Characterization Package (planning document), for field/sampling procedures (located in project file,) thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual samples Useable results vs unuseable	Qualitative	NA	See Table E-4, final number of samples at Certified Inspector's discretion
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A



Table E-3 V&V of Beryllium Results – Buildings 331FD and C331

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
BERYLLIUM	Prep NMAM 7300	LAB ---->	Johns Manville, Littleton, Co
	METHOD OSHA ID-125G	RIN ---->	RIN03Z1260
QUALITY REQUIREMENTS		Measure	Frequency
ACCURACY	Calibrations Initial	linear calibration	≥1
	Continuing	80%<=%R<120%	≥1
	LCS/MS	80%<=%R<120%	≥1
	Blanks - lab & field	<MDL	≥1
	interference check std (ICP)	NA	NA
PRECISION	LCS/D	80%<=%R<120% (RPD<20%)	≥1
	field duplicate	all results < RL	≥1
	COC	Qualitative	NA
REPRESENTATIVENESS	hold times/preservation	Qualitative	NA
	Controlling Documents (Plans, Procedures, maps etc.)	Qualitative	NA
	measurement units	ug/100cm <sup>2</sup>	NA
COMPARABILITY	Plan vs Actual samples	>95%	NA
COMPLETENESS	usable results vs unusable	>95%	NA
SENSITIVITY	detection limits	MDL of 0.012 ug/100cm <sup>2</sup>	all measures
		COMMENTS	
		No qualifications significant enough to change project decisions, i.e., classification of Type 1 facilities confirmed. All results were below associated action levels.	

**Table E-4 Data Completeness Summary – Buildings 331FD and C331**

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	Building 331FD – Fire Department (interior)	12 biased	4 biased	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116  RIN03Z1261 Sample numbers 331-03252003-315-209 through 331-03252003-315-212
Asbestos	Building C331 (interior)	6 biased	2 biased	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116  RIN03Z1261 Sample numbers C331-03252003-315-201 and C331-03252003-315-202
Beryllium	Building 331FD - Fire Department (interior)	15 biased	49 biased	No contamination found, all results were less than associated action levels	OSHA ID-125G – RIN03Z1260  No results above action level (0.2 ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> )
Beryllium	Building C331 (interior)	5 biased	5 biased	No contamination found, all results were less than associated action levels	OSHA ID-125G – RIN03Z1260  No results above action level (0.2 ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> )
Radiological	Survey Area 3 Survey Unit 331-B-003 Building 331 (fire department - interior)	25 α TSA (15 random/10 biased) and 25 α Smears (15 random/10 biased)  2 QC TSA  5% scan	59 α TSA (15 random/44 biased) and 59 α Smears (15 random/44 biased)  4 QC TSA  5% scan	No elevated contamination at any location, all values below PDS unrestricted release levels	Uranium and/or Transuranic DCGLs as applicable

**Table E-4 Data Completeness Summary – Buildings 331FD and C331**

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC) <sup>A</sup>	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 3 Survey Unit C331-B-004 Building C331 (interior)	25 $\alpha$ TSA (15 random/10 biased) and 25 $\alpha$ Smears (15 random/10 biased)  2 QC TSA 5% scan	25 $\alpha$ TSA (15 random/10 biased) and 25 $\alpha$ Smears (15 random/10 biased)  2 QC TSA 5% scan	No elevated contamination at any location, all values below PDS unrestricted release levels	Uranium and/or Transuranic DCGL as applicable

A - Asbestos Sample Number Planned was only an estimate, actual sample numbers are determined during the inspection